QUATECH

SSP-100
Single Channel RS-232 PCMCIA Asynchronous Adapter

for PCMCIA Card Standard compatible machines

User's Manual

INTERFACE CARDS FOR IBM PC/AT AND PS/2

QUATECH, INC.   TEL: (330) 434-3154
662 Wolf Ledges Parkway   FAX: (330) 434-1409
Akron, Ohio 44311   BBS: (330) 434-2481

Warranty Information

Quatech Inc. warrants the ___**SSP-100**___ to be free of defects for __**five (5) years**__ from the date of purchase. Quatech Inc. will repair or replace any adapter that fails to perform under normal operating conditions and in accordance with the procedures outlined in this document during the warranty period. Any damage that results from improper installation, operation, or general misuse voids all warranty rights.

The authors have taken due care in the preparation of this document and any associated software program(s). In no event will Quatech Inc. be liable for damages of any kind, incidental or consequential, in regard to or arising out of the performance or form of the materials presented herein and in the program(s) accompanying this document. No representation is made regarding the suitability of this product for any particular purpose.

Quatech Inc. reserves the right to edit or append to this document or the product(s) to which it refers at any time and without notice.

Please complete the following information and retain for your records. Have this information available when requesting warranty service.

Date of purchase:

Model Number: **SSP-100**

Product Description: Single Channel Asynchronous RS-232 Communications PCMCIA Adapter

Serial Number:

CE Declaration of Conformity

Manufacturer's Name: Quatech, Inc.

Manufacturer's Address: 662 Wolf Ledges Parkway
                                            Akron, OH 44311 (USA)

Application of Council Directive: 89/336/EEC

**Standards to which
Conformity is Declared:**   * EN50081-1
                                               (EN55022)
                                            * EN50082-1
                                               (IEC 801-2, IEC 801-3, & IEC 801-4)

Type of Equipment: Information Technology Equipment

Equipment Class: Commercial, Residential, & Light
                                            Industrial

Product Name: PCMCIA Card

Model Number :   SSP-100

Table of Contents

1. Introduction

The SSP-100 is a single channel RS-232 asynchronous serial adapter for systems equipped with PCMCIA Type II and/or Type III expansion sockets. The SSP-100 is a PCMCIA Type II (5 mm) card and is PCMCIA PC Card Standard Specification 2.1 compliant.

PCMCIA Card   Cable Assembly
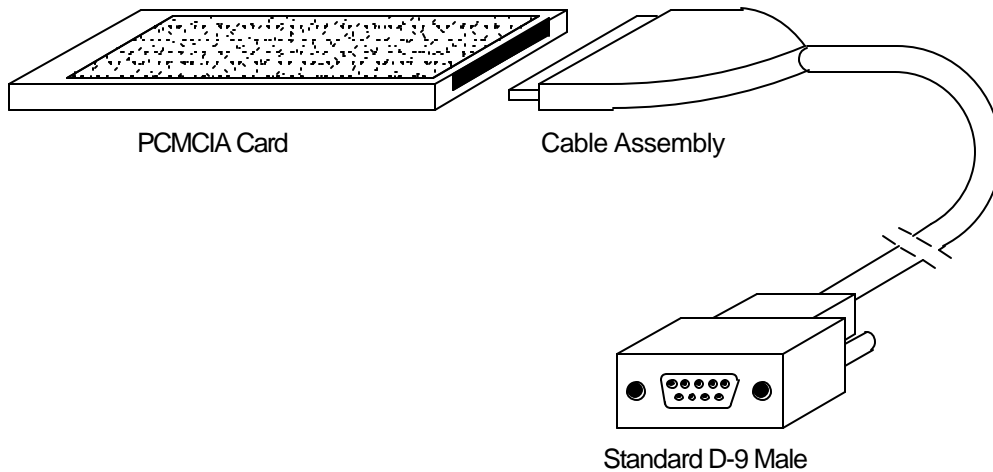
Standard D-9 Male

Figure 1. SSP-100 Card and Cable Assembly

The SSP-100 unit's serial port is implemented using a 16C550 Universal Asynchronous Receiver/Transmitter (UART), which is the recommended communications interface for multitasking environments and with applications involving high data transfer rates.

(This page intentionally left blank.)

2. DOS / Windows 3.x Installation

Two configuration software programs are provided with the SSP-100: a Client Driver, and a card Enabler. Both of these programs are executed from DOS (before entering Windows) and allow operation of the SSP-100 in both the DOS and Windows 3.x environments. For optimal operation, however, the Client Driver is the preferred method of installation and configuration. The table below highlights the differences between these programs.

Client Driver (recommended)	Enabler (not recommended)
File type: DOS device driver	File type: DOS executable
Interfaces to PCMCIA Card and Socket Services software (PCMCIA host adapter independent)	Interfaces directly to Intel 82365SL and other PCIC compatible PCMCIA host adapters
Allows automatic configuration of SSP-100 adapters upon insertion (Hot Swapping)	Does not support automatic configuration of adapters upon insertion (Hot Swapping)
Requires PCMCIA Card and Socket Services software	Does not require PCMCIA Card and Socket Services software

Figure 2. Client Driver versus Enabler for DOS/Windows 3.x.

Card and Socket Services software is commercially available from several vendors for most desktop and laptop PCs. If you are unsure whether Card and Socket Services software is currently installed on your system, install the SSP-100 Client Driver as discussed in following section. When loaded, the Client Driver will display an error message if Card and Socket Services software is not detected.

2.1 SSP-100 Client Driver for DOS

In order to use the SSP-100 Client Driver, the system must be configured with Card and Socket Services software. Card and Socket Services software is not provided with the SSP-100 but is available from Quatech.

> ### IMPORTANT:
> Some versions of Card and Socket Services dated before 1993 do not support general purpose I/O cards. If after careful installation of the Client Driver the adapter does not configure or operate properly, an updated version of Card and Socket Services may be required.

2.1.1 Client Driver Installation

The following procedure is used to install the SSP-100 Client Driver:

1. Copy the Client Driver from the SSP-100 distribution diskette onto the system's hard drive.

2. Using an ASCII text editor, open the system's CONFIG.SYS file located in the root directory of the boot drive.

3. Locate the line(s) in the CONFIG.SYS file where the Card and Socket Services software is installed.

4. **AFTER** the line(s) installing the Card and Socket Services software, add the following line to the CONFIG.SYS file: DEVICE = *drive*:*path*\\ SSP100CL.SYS *options* where *options* are the SSP-100 Client Driver command line options discussed on the following pages.

5. Save the CONFIG.SYS file and exit the text editor.

6. Insert the SSP-100 into one of the system's PCMCIA slots.

   NOTE: Since the SSP-100 Client Driver supports "Hot Swapping", it is not necessary to have the SSP-100 installed when booting the system. By inserting the card before booting, however, the Client Driver will report the adapter configuration during the boot process thereby verifying the changes made to the CONFIG.SYS.

7. Reboot the system and note the message displayed when the SSP-100 Client Driver is loaded. If the Client Driver reports an "invalid command line option", correct the entry in the CONFIG.SYS file and reboot the system again. If the Client Driver reports "Card and Socket Services not found", a

version of Card and Socket Services must be installed on the system or the SSP-100 Enabler program must be used to configure the adapter. If the Client Driver reports the desired adapter configuration, the installation process is complete and the SSP-100 may be removed and/ or inserted from the system as desired. On each insertion into the PCMCIA socket, the SSP-100 will be automatically reconfigured according to the command line options.

2.1.2 Command Line Options

The SSP-100 Client Driver accepts up to eight command line arguments from the user to determine the configuration of the SSP-100. If any arguments are provided, the Client Driver will attempt to configure any SSP-100 with the options specified in the order they are entered on the command line. Each argument must be enclosed in parenthesis and must be separated from other arguments by a **space** on the command line. Within each argument, any or all of the following parameters may be specified using a **comma (no spaces)** to separate each parameter:

S*socket*   specifies which PCMCIA socket the SSP-100 must be inserted into for this configuration argument to be used. *socket* must be in the range 0 - 15. If this option is omitted, the configuration argument will apply to SSP-100 inserted into any socket

B*address*   specifies a the base I/O address of the SSP-100 in hexadecimal. This address must reside on an even 8-byte boundary. If this option is omitted, a base address will be assigned by Card and Socket Services. The "A" switch must not be used when using this command.

I*irq*   specifies the interrupt level (IRQ) of the SSP-100 in decimal. *irq* must be one of the following values: 3, 4, 5, 7, 9, 10, 11, 12, 14, 15, or 0 if no IRQ is desired. If this option is omitted, an interrupt level will be assigned by Card and Socket Services. The "A" switch must not be used when using this command.

E*bios*   specifies which location the configured SSP-100 will be placed in the BIOS equipment list. Valid numbers are 1-4. If this option is omitted, the SSP-100 will not appear in the BIOS equipment list. If no number is specified, the SSP-100 will be placed in the next available location in the BIOS equipment list. The "A" switch must not be used when using this command.

A*com*   specifies which Logical COM port the SSP-100 will be configured. Valid COM port numbers would be 1-4. The BIOS Equipment list will be automatically updated, so the E command is not required when using this

option. If no number is specified, the SSP-100 will be configured as the next available COM Port using the standard base address and IRQ settings for that COM port. If this option is omitted, the user must either specify a base address or IRQ setting for the SSP-100 or allow Card and Socket Services to select a base address and IRQ to configure the card.   When the "A" command is used, the "B", "I", and "E" commands must not be used.

2.1.2.1 Example 1
    DEVICE = C:\SSP-100\SSP100CL.SYS

In example 1, no command line arguments are specified. The Client Driver will configure a SSP-100 inserted into any socket with a base address and IRQ assigned by Card and Socket Services. The BIOS equipment list will not be updated.

2.1.2.2 Example 2
    DEVICE = C:\SSP-100\SSP100CL.SYS (b290,i11)

In example 2, a single command line argument is provided. The Client Driver will attempt to configure a SSP-100 inserted into any socket with a base address of 290H and IRQ 11. The BIOS equipment list will not be updated. If address 290H or IRQ 11 is unavailable, the SSP-100 will not be configured.

2.1.2.3 Example 3
    DEVICE = C:\SSP-100\SSP100CL.SYS (s0,b300,i5)

In example 3, a single command line argument is provided. The Client Driver will attempt to configure a SSP-100 inserted into socket 0 with a base address of 300H and IRQ 5. The BIOS equipment list will not be updated. If address 300H or IRQ 5 is unavailable, the SSP-100 will not be configured. In addition, if a SSP-100 is inserted into any other socket, it will not be configured.

2.1.2.4 Example 4
    DEVICE = C:\SSP-100\SSP100CL.SYS (i5,b300)

In example 4, a single command line argument is provided. Because the parameter order is not significant, the Client Driver will attempt to configure a SSP-100 inserted into any socket with a base address of 300H and IRQ 5. The BIOS equipment list will not be updated. If address 300H or IRQ 5 is unavailable, the SSP-100 will not be configured.

2.1.2.5 Example 5

DEVICE = C:\SSP-100\SSP100CL.SYS (b300,i5) (i10) ( )

In example 5, three command line arguments are provided. The Client Driver will first attempt to configure a SSP-100 inserted into any socket with a base address of 300H and IRQ 5. The BIOS equipment list will not be updated. If address 300H or IRQ 5 is unavailable, the Client Driver will proceed to the second command line argument and attempt to configure the card with a base address assigned by Card and Socket Services and IRQ 10. If IRQ 10 is also unavailable, the Client Driver will proceed to the third command line argument and attempt to configure the SSP-100 with a base address <u>and</u> an IRQ assigned by Card and Socket Services.

2.1.2.6 Example 6

DEVICE = C:\SSP-100\SSP100CL.SYS (b300,i5) ( ) (i10)

In example 6, the three command line arguments of example 5 have been rearranged. The Client Driver will first attempt to configure a SSP-100 inserted into any socket with a base address of 300H and IRQ 5. The BIOS equipment list will not be updated. If address 300H or IRQ 5 is unavailable, the Client Driver will proceed to the second command line argument and attempt to configure the card with a base address and IRQ assigned by Card and Socket Services. Since the second command line argument includes all available address and IRQ resources, the third command line argument will never be reached by the Client Driver. It is the user's responsibility to place the command line arguments in a logical order.

2.1.2.7 Example 7

DEVICE = C:\SSP-100\SSP100CL.SYS (s0,b300,i5) (s1,b340,i10)

The type of configuration shown in example 7 may be desirable in systems where more than one SSP-100 is to be installed. In this example, the Client Driver will attempt to configure a SSP-100 inserted into socket 0 with a base address of 300H and IRQ 5. If the SSP-100 is inserted into socket 1, the Client Driver will attempt to configure it with base address 340H and IRQ 10. This allows the user to force the SSP-100's address and IRQ settings to be socket specific which may simplify cable connections and software development. As in the previous examples, however, if the requested address or interrupt resources are not available, the SSP-100 will not be configured.

2.1.2.8 Example 8

DEVICE=C:\SSP-100\SSP100CL.SYS (s0,b300,i5,e3)

In Example 8, the Client Driver will attempt to configure an SSP-100 into socket 0 with a base address of 300H and IRQ 5. The COM 3 spot of the BIOS Equipment list will be occupied with the SSP-100. If the requested socket, base address or interrupt resources are not available, the SSP-100 will not be configured and no update of the equipment list will take place. If the requested spot in the BIOS equipment list is not available, but the requested socket, base address, and IRQ are available, the SSP-100 will be configured but an error message will appear stating that no update of the equipment list can take place.

2.1.2.9 Example 9

DEVICE=C:\SSP-100\SSP100CL.SYS (s0,a3)

In Example 9, the Client Driver will attempt to configure an SSP-100 into socket 0 with the COM 3 standard address of 3E8H and IRQ 4. The COM 3 spot of the BIOS equipment list will be updated automatically. If the requested socket is unavailable, or the COM 3 resource settings are unavailable, the SSP-100 will not be configured and no update of the BIOS equipment list will be made. If the requested spot in the BIOS equipment list is not available, but the requested socket, base address, and IRQ are available, the SSP-100 will be configured but an error message will appear stating that no update of the equipment list can take place.

2.1.3 Common Problems

Generic Client Drivers:
Many Card and Socket Services packages include a generic client driver (or SuperClient) which configures standard I/O devices. If one of these generic client drivers is installed, it may configure the SSP-100 causing the SSP-100 client driver to fail installation. In these cases, the user should do one of the following:

1. modify the operation of the generic client driver to disable the configuration of modem/serial port cards. Consult the Card and Socket Services documentation for availability and details of this feature.

2. place the SSP-100 client driver before the generic client driver in the CONFIG.SYS.

Available Resources:
One function of the Card and Socket Services software is to track which system resources (memory addresses, I/O addresses, IRQs, etc.) are available for assignment to inserted PCMCIA cards. Sometimes, however, the Card Services software assumes or incorrectly determines that a particular resource is used when it is actually available. Most Card and Socket Services generate a resource table in a file (typically in the form of an .INI file) which the user can modify to adjust the available system resources. Consult the Card and Socket Services documentation for availability and details of this feature.

Multiple Configuration Attempts:
Some Card and Socket Services have a setting which aborts the configuration process after a single configuration failure (such as a request for an unavailable resource). The user should change this setting to allow for multiple configuration attempts. Consult the Card and Socket Services documentation for availability and details of this feature.

Older Versions of Card and Socket Services:
Some versions of Card and Socket Services dated before 1993 do not support general purpose I/O cards. If after careful installation of the Client Driver the SSP-100 does not configure or operate properly, an updated version of Card and Socket Services may be required. Card and Socket Services software is available from Quatech.

2.2 SSP-100 Enabler for DOS

For systems that are not operating PCMCIA Card and Socket Services software, the SSP-100 DOS Enabler may be used to enable and configure the adapter. This Enabler, SSP100EN, will operate on any DOS system using an Intel 82365SL or PCIC compatible PCMCIA host adapter including the Cirrus Logic CL-PD6710 / 6720, the VLSI VL82C146, and the Vadem VG-365 among others.

> ## IMPORTANT:
> In order to use the SSP-100 Enabler for DOS, the system MUST NOT be configured with Card and Socket Services software. If a Card and Socket Services software is installed, the SSP-100 Enabler may interfere with its operation and with the device(s) it controls.

The SSP-100 Enabler does not support automatic configuration of adapters upon insertion, more commonly referred to as "Hot Swapping". This means the adapter must be installed in one of the system's PCMCIA sockets before executing SSP100EN. If more than one adapter is installed in a system, the Enabler must be executed separately for each adapter. Furthermore, SSP100EN should be executed to release the resources used by the adapter before it is removed from the PCMCIA socket. Since PCMCIA adapters do not retain their configuration after removal, any adapter that is removed from the system must be reconfigured with the Enabler after re-inserting it into a PCMCIA socket.

> ## IMPORTANT:
> The Enabler requires a region of high DOS memory when configuring a SSP-100 This region is 1000H bytes (4KB) long and by default begins at address D0000H (the default address may be changed using the "W" option). If a memory manager such as EMM386, QEMM, or 386Max is installed on the system, this region of DOS memory must be excluded from the memory manager's control. Consult the documentation provided with the memory manager software for instructions on how to exclude this memory region.

2.2.1 Command Line Options

To configure a SSP-100 in the system, the Enabler requires one command line argument from the user to determine the configuration of the card. This argument must be enclosed in parentheses and within the argument, any or all of the following parameters may be specified using a **comma (no spaces)** to separate each parameter:

S*socket*   specifies which PCMCIA socket the SSP-100 must be inserted into for this configuration argument to be used. *socket* must be in the range 0 - 15. This option is required if the 'R' option is not used.

B*address*   specifies the base I/O address of the SSP-100 in hexadecimal. This address must reside on an even 8-byte boundary. This option is required if the 'R' option is not used.

I*irq*   specifies the interrupt level (IRQ) of the SSP-100 in decimal. *irq* must be one of the following values: 3, 4, 5, 7, 9, 10, 11, 12, 14, 15, or 0 if no IRQ is desired. This option is required if the 'R' option is not used.

W*address*   specifies the base address of the memory window required to configure the SSP-100. Set *address* = D0 for a memory window at segment D000, *address* = D8 for a memory window at segment D800, etc. Valid settings for *address* are C8, CC, D0, D4, D8, and DC. If this option is omitted, a memory window at segment D000 will be used.

E*bios*   specifies which location the configured SSP-100 will be placed in the BIOS equipment list. Valid numbers are 1-4. If this option is omitted, the SSP-100 will not appear in the BIOS equipment list. If no number is specified, the SSP-100 will be placed in the next available location in the BIOS equipment list. The "A" switch must not be used when using this command.

A*com*   specifies which Logical COM port the SSP-100 will be configured. Valid COM port numbers would be 1-4. The BIOS Equipment list will be automatically updated, so the E command is not required when using this option. If no number is specified, the SSP-100 will be configured as the next available COM Port using the standard base address and IRQ settings for that COM port. If this option is omitted, the user must either specify a base address or IRQ setting for the SSP-100 or allow Card and Socket Services to select a base address and IRQ to configure the card.   When the "A" command is used, the "B", "I", and "E" commands must not be used.

Before removing a SSP-100 from its PCMCIA socket, the Enabler should be executed to free the system resources allocated when the card was installed. For this operation the Enabler provides on additional command line option:

R   instructs the enabler to release the resources previously allocated to the
           SSP-100. When the 'R' option is used, any settings specified by the 'B', and 'I'
           options are ignored.   The BIOS equipment list WILL NOT be cleared of the
           SSP-100 upon execution of the release command.

2.2.1.1 Example 1
        SSP100EN

In example 1, no command line argument is specified. The Enabler will report an error and display the proper usage of the command.

2.2.1.2 Example 2
        SSP100EN (s0,b300,i5)

In example 2, the Enabler will configure the SSP-100 in socket 0 with a base address of 300H and IRQ 5 using a configuration memory window at segment D000.

2.2.1.3 Example 3
        SSP100EN (i10,b340,s1)

In example 3, the Enabler will configure the SSP-100 in socket 1 with a base address of 340H and IRQ 10 using a configuration memory window at segment D000.

2.2.1.4 Example 4

SSP100EN (s0,b300,i3,wd8)

In example 4, the Enabler will configure the SSP-100 in socket 0 with a base address of 300H and IRQ 3 using a configuration memory window at segment D800.

2.2.1.5 Example 5

SSP100EN (i5,b340,s1)

In example 2, the Enabler will configure the SSP-100 in socket 1 with a base address of 340H and IRQ 5 using a configuration memory window at segment D000.

2.2.1.6 Example 6

SSP100EN (s0,b300,i5,r)

In example 6, the Enabler will release the configuration used by the SSP-100 in socket 0 using a configuration memory window at segment D000. The base address and IRQ parameters are ignored and may be omitted.

2.2.1.7 Example 7

SSP100EN (s1,r,wcc)

In example 7, the Enabler will release the configuration used by the SSP-100 in socket 1 using a configuration memory window at segment CC00.

2.2.1.8 Example 8

SSP100EN (s0,b300,i5,e3)

In Example 8, the Client Driver will attempt to configure an SSP-100 into socket 0 with a base address of 300H and IRQ 5. The COM 3 spot of the BIOS Equipment list will be occupied with the SSP-100. If the requested socket, base address or interrupt resources are not available, the SSP-100 will not be configured and no update of the equipment list will take place. If the requested spot in the BIOS equipment list is not available, but the requested socket, base address, and IRQ are available, the SSP-100 will be configured but an error message will appear stating that no update of the equipment list can take place.

2.2.1.9 Example 9

SSP100EN (s0,a3)

In Example 9, the Client Driver will attempt to configure an SSP-100 into socket 0 with the COM 3 standard address of 3E8H and IRQ 4. The COM 3 spot of the BIOS equipment list will be updated automatically. If the requested socket is unavailable, or the COM 3 resource settings are unavailable, the SSP-100 will not be configured and no update of the BIOS equipment list will be made. If the requested spot in the BIOS equipment list is not available, but the requested socket, base address, and IRQ are available, the SSP-100 will be configured but an error message will appear stating that no update of the equipment list can take place.

2.2.2 Common Problems

Memory Range Exclusion:
The Enabler requires a region of high DOS memory when configuring a SSP-100. This region is 1000H bytes (4KB) long and by default begins at address D0000H (the default address may be changed using the "W" option). If a memory manager such as EMM386, QEMM, or 386Max is installed on the system, this region of DOS memory must be excluded from the memory manager's control. Consult the documentation provided with the memory manager software for instructions on how to exclude this memory region.

Furthermore, some systems use the high memory area for BIOS shadowing to improve overall system performance. In order for the Enabler to operate, any BIOS shadowing must be disabled in the address range specified for the configuration window. BIOS shadowing can usually be disabled through the system's CMOS setup utility.

Socket Numbers:
The Enabler requires the SSP-100's socket number to be specified on the command line and the SSP-100 must be inserted into the socket before the Enabler is invoked. Some vendors number their sockets from 1 to N while other vendors number their sockets from 0 to N-1. For the SSP-100 Enabler, the lowest socket number in the system is designated socket 0.

Card and Socket Services Software:
In order to use the SSP-100 Enabler for DOS, the system MUST NOT be configured with Card and Socket Services software. If a Card and Socket Services software is installed, the SSP-100 Enabler may interfere with its operation and with the device(s) it controls. For systems configured with Card and Socket Services, the SSP-100 Client Driver is the recommended method of configuration.

(This Page Left Intentionally Blank)

# 3. Windows 95, 98, 2000, ME, NT Installation

To allow easy configuration of the SSP-100, a Windows **"INF"** configuration file has been written for the hardware.

3.1 Installing a SSP-100 Under Windows 95, 98, ME, 2000.

1. Insert the SSP-100 into any available PC Card socket.

2. The first time a new PC Card type is installed the **New Hardware Found** window opens. After this first installation Windows will automatically detect and configure the card. If the **New Hardware Found** window does not open, then skip to the next section, "SSP-100 Resource Settings".

3. The **New Hardware Found** window provides several options to configure the SSP-100 card. Click the **"Search for the best driver for your device"** option button. Click "Next" to continue.

Figure 3. Windows 95,98, ME New Hardware Wizard (*Search for the best driver...*)

---
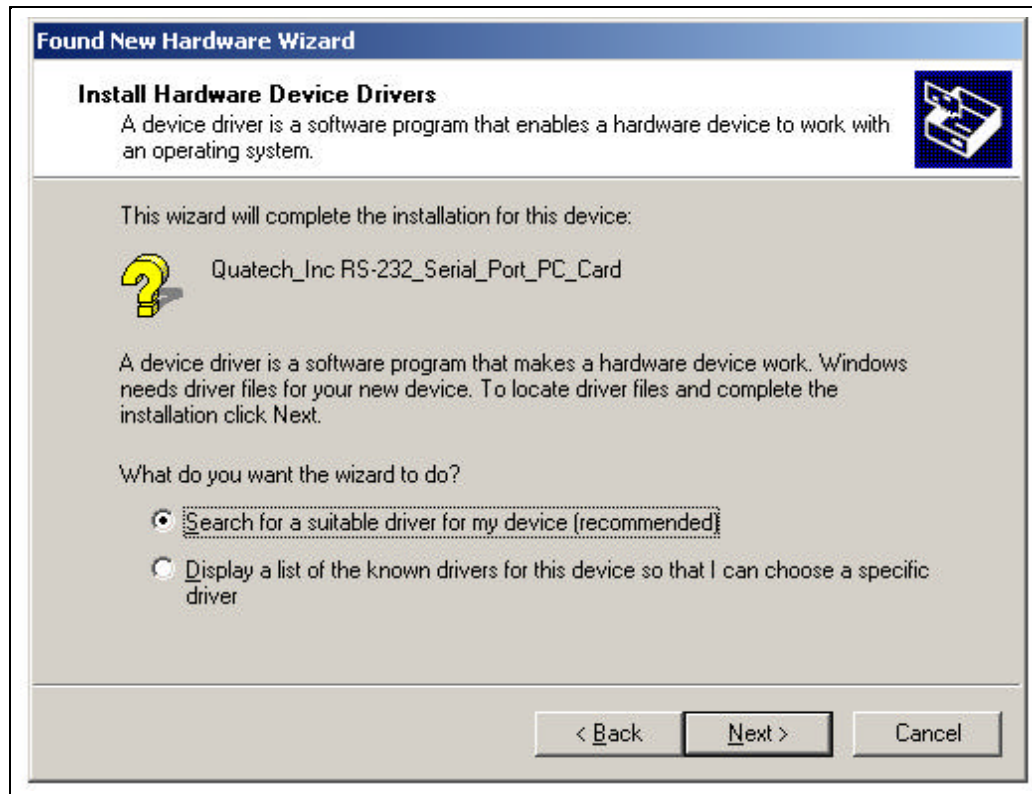
4. The **New Hardware Found** window provides several options to configure the SSP-100 card. Insert the CD with the **Windows Configuration** file, select "CD-ROM drive" and path, and click "Next". Windows will browse the path for the necessary files.

Figure 5. Windows 95, 98, ME Add New Hardware Wizard

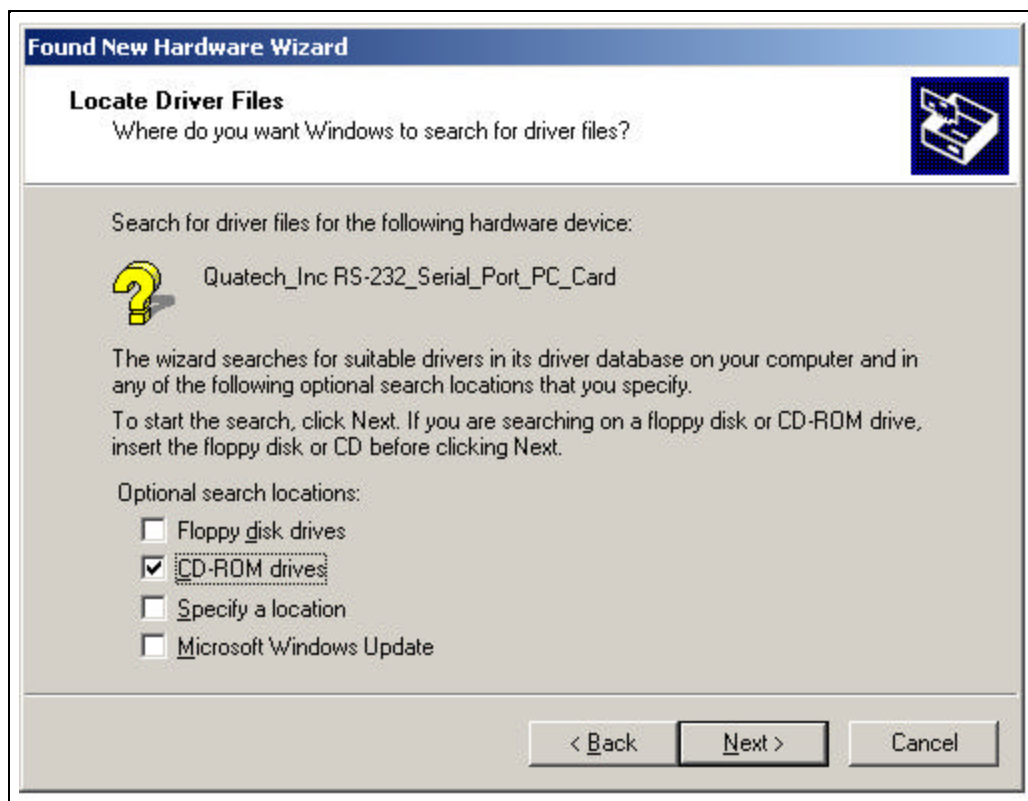5. During the installation process, it may be required to supply the computer

Figure 6. Windows 2000 New Hardware Wizard

with the Windows CD or installation diskettes. The SSP-100's serial devices will require the file "SERIALUI.DLL". Insert the CD or diskette and click "OK".

> **IMPORTANT NOTE:**
> If the user already has these files installed on the computer, or if the installation disks are unavailable, it may not be necessary to supply the computer with the Windows CD or installation diskettes. If prompted for the disks, click "OK". A dialog box with an option to skip will appear. Click the "Skip" button and the files will not be installed. If these files exist in the windows system directory, those files will be used.

The SSP-100 PC Card should now be configured. The default configuration for the SSP-100 is a base address and IRQ assigned by Windows.

3.2 SSP-100 Resource Settings in Windows

Windows maintains a registry of all known hardware installed within the computer. Inside this hardware registry Windows keeps track of all the computer's resources, such as base I/O addresses, IRQ levels, and DMA channels. In the case of a **PC Card (PCMCIA)** type board, Windows configures the new hardware using free resources it finds within the hardware registry, and updates the registry automatically.

To view and / or edit hardware devices in Windows use the system **Device Manager**. To access Device Manager double click the **System** icon in the Windows control panel, or click the **My Computer** icon on the Windows desktop with the right mouse button and select **Properties** from the pull down menu. Consult Windows on-line help for details on the use of the **Device Manager**.

3.2.1 Viewing Resource Settings with Device Manager

1. Start the Windows **Device Manager**.

2. Double click on the hardware class **Ports (Com and LPT)** to list hardware devices in the class.

3. The SSP-100 belongs to this hardware class. The device name for the SSP-100 is **Quatech SSP-100: RS-232 Serial Port** (see Figure 7. Windows 95, 98 Device Manager{Figure 8. Windows 2000}).

4. Open the **Properties** dialog for the SSP-100 device, then click the **Resources** tab to view the Input/Output Range and Interrupt Request resource allocations.

5. Use the COM Port device names (COM2, COM4, etc.) to access any of the particular serial ports on the SSP-100. This name is required by a Windows application when accessing a particular port.
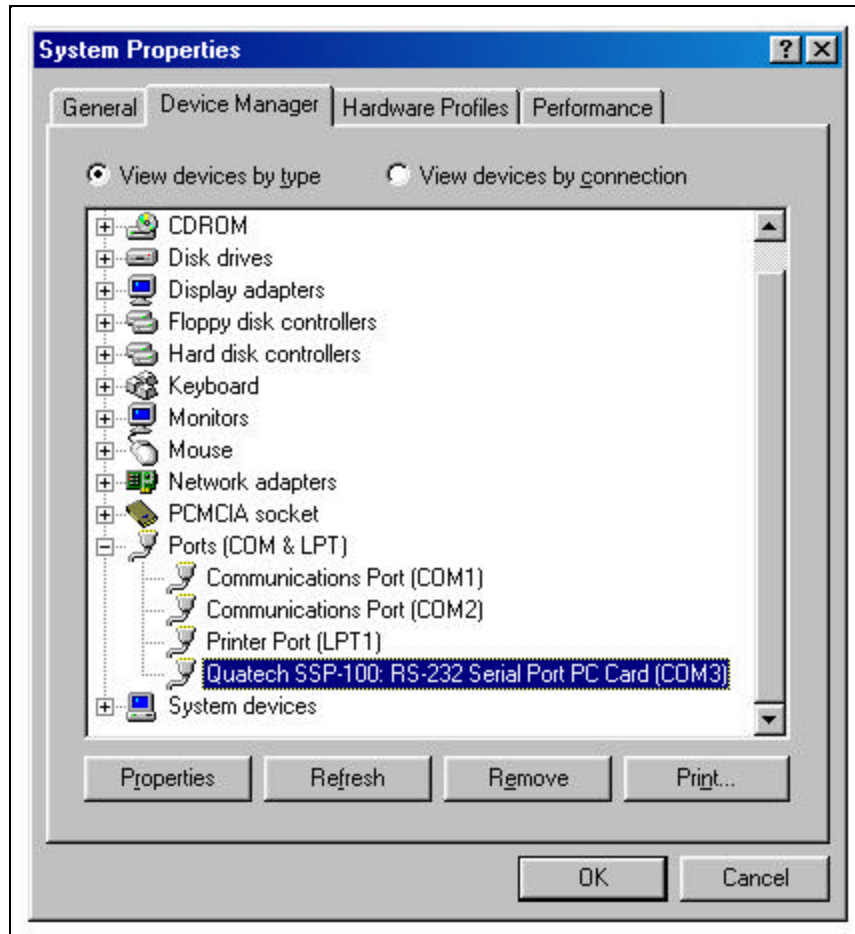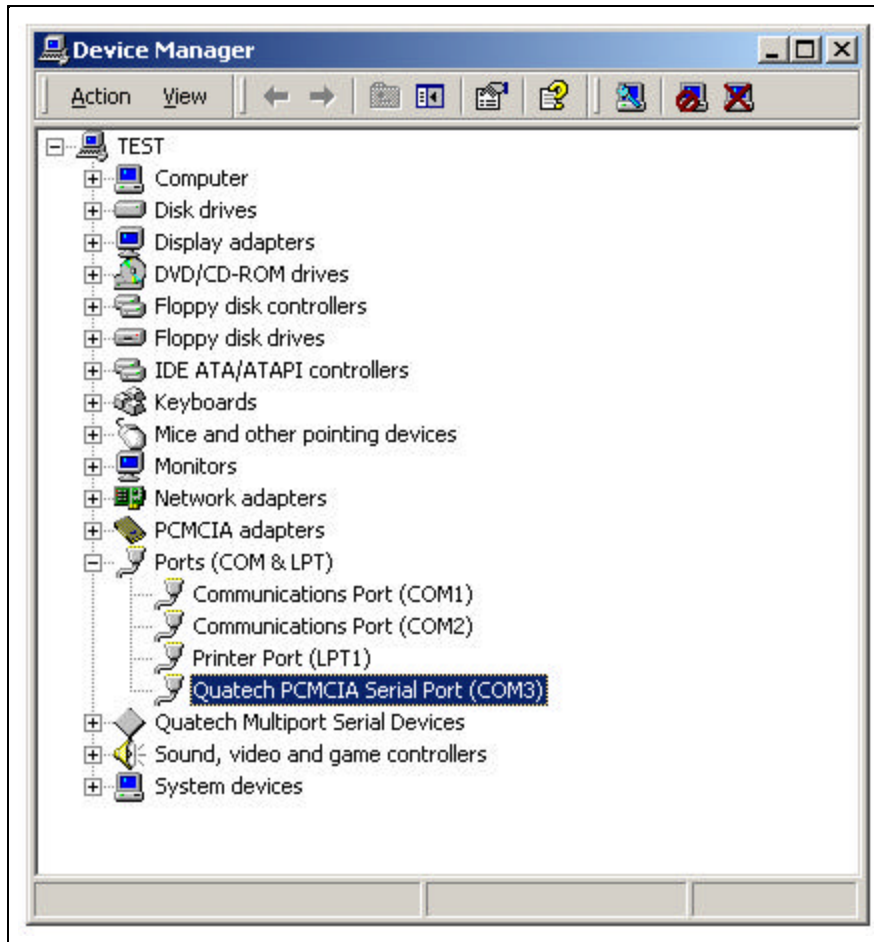

Figure 7. Windows 95, 98,ME Device Manager

Figure 8. Windows 2000 Device Manager

3.2.2 Changing Resource Settings with Windows 95, 98, ME Device Manager

1. Start the Windows **Device Manager**.

2. Double click on the hardware class **Ports (Com and LPT)** to list hardware devices in the class.

3. The SSP-100 belongs to this hardware class. The device name for the SSP-100 is **:Quatech SSP-100: RS-232 Serial Port.**

4. Open the **Properties** dialog for the SSP-100 device, then click the **Resources** tab to view the Input/Output Range and Interrupt Request resource allocations. (see Figure 9. Windows 95, 98, ME Resource Allocation).

3.2.3 Changing Resource Setting with Window 2000 Device Manager

1. Start the Windows **Device Manager**.

2. Double click on the hardware class **Ports (Com and LPT)** to list hardware devices in the class.

3. The SSP-100 belongs to this hardware class. The device name for the SSP-100 is **:Quatech PCMCIA Serial Port.**

4. Open the **Properties** dialog for the SSP-100 device, then click the **Resources** tab to view the Input/Output Range and Interrupt Request resource allocations. (see Figure 10. Windows 2000 Resource Allocation).
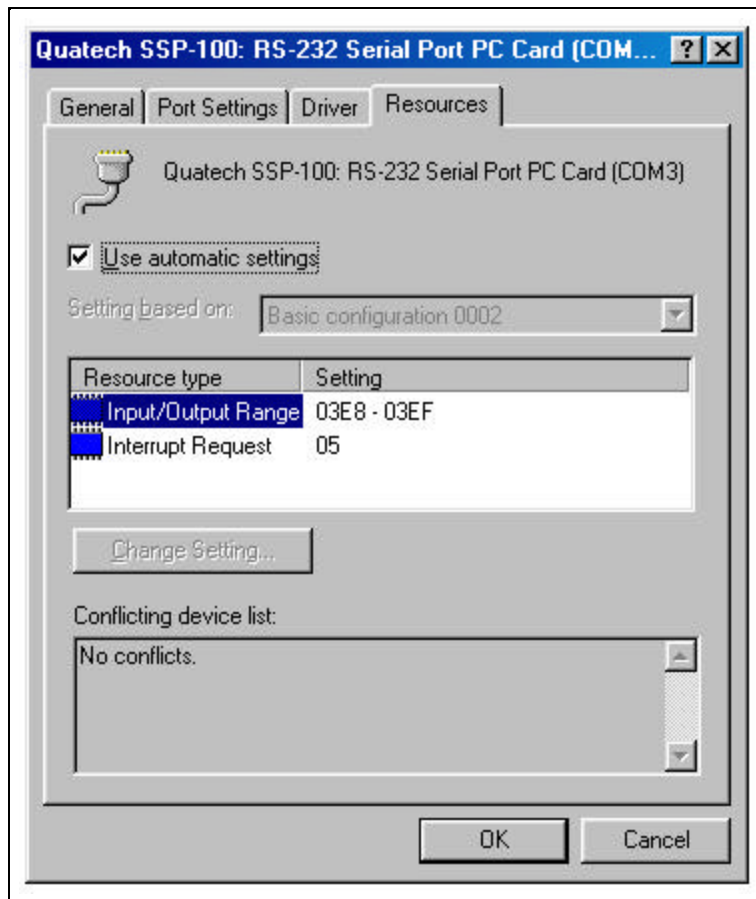
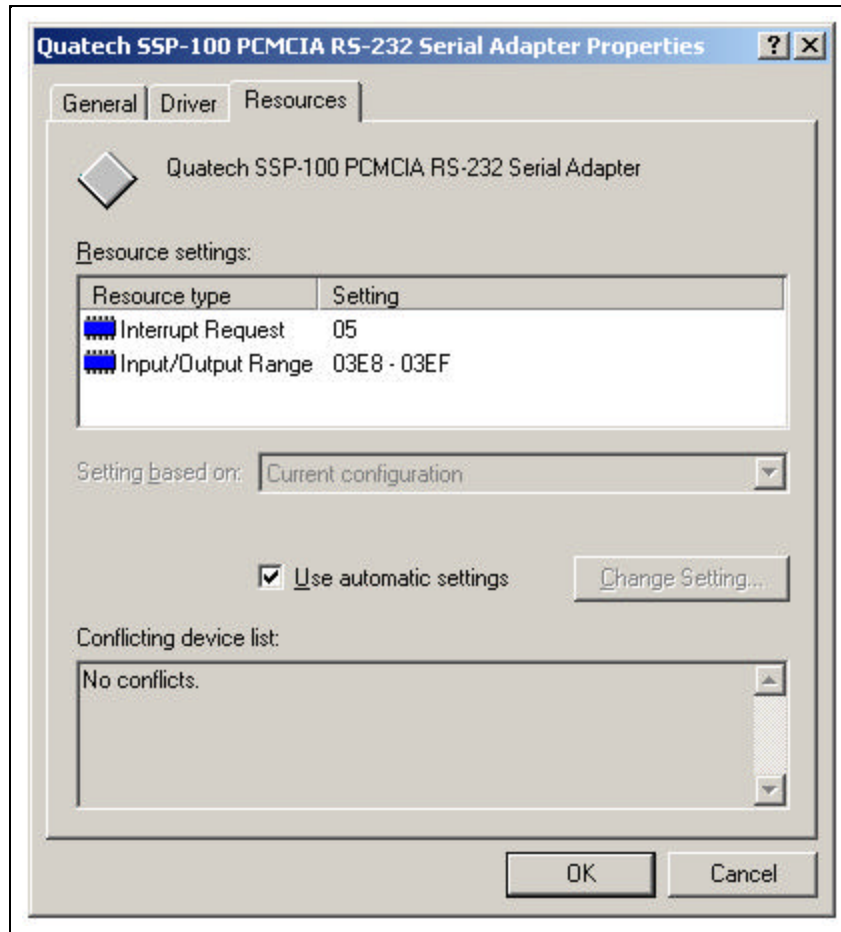Figure 9. Windows 95,98,ME Resource Allocation

Figure 10. Windows 2000 Resource Allocation

5. Several predefined **Basic Configurations** have been included for the SSP-100
    . The SSP-100 can either be forced to use a "standard" base address for
    COM1 - COM4, or it may be configured to allow Windows to assign the base
    address. Standard base I/O addresses are defined only for the first four logic
    COM ports: 3F8 (COM1), 2F8 (COM2), 3E8 (COM3), 2E8 (COM4). Some
    older applications are limited to using COM1 - COM4 , in which case forcing
    the SSP-100 to use a "standard" base address may be necessary. When
    Windows is allowed to select the base I/O address, a "standard" COM1 -
    COM4 base address is usually selected if one is available. Otherwise, a
    non-standard base address is used. Windows enumerates any COM port at a
    non-standard address starting with COM5.

6. Select a **Basic Configuration** that displays "No conflicts" in the bottom display region titled **Conflicting Device List** from the drop down list. Some applications may not be able to access ports higher than COM4. To use the SSP-100 PCMCIA serial ports with these applications you might be forced to remove other serial communications devices from your system.

7. Windows should have chosen an available **Interrupt Request** setting automatically when the I/O address range was configured by a Basic Configuration selection. This default **Interrupt Request** setting should not need changed as long as "No conflicts" is displayed in the bottom display region titled **Conflicting Device List**. If you are satisfied with Windows selection then skip the next step.

8. To modify the **Interrupt Request** setting click the resource name and click the **Change Setting** button. An Edit Resource window will open up. Inside this window click on the up/down arrows to the right of the Interrupt Request value. This scrolls you through all of the allowable resources for your hardware. Pay attention to the conflict information at the bottom of the window. Do not select a value that causes a conflict with any other installed hardware.

9. If any changes have been made to the SSP-100's configuration the card will automatically be reconfigured to the new resources specified. Any time a PCMCIA card of this type is inserted Windows will attempt to configure the card at these resource settings. Click the **Use Automatic Settings** box to reset the SSP-100 card for automatic configuration.

3.3 Common Problems

Basic Configuration List Not Available:
A problem noted on some systems is after a basic configuration has been manually selected is the basic configurations list for the SSP-100 is no longer available. The solution to this problem is to check the "Use Automatic Settings" box and allow Windows to reconfigure the SSP-100 card. The basic configurations list should once again be visible.

Base I/O Address Resource Modification Not Allowed:
The SSP-100 can either be forced to use a "standard" base address for COM1 - COM4, or it may be configured to allow Windows to assign the base address. Windows will not allow the base I/O address resource to be modified if the SSP-100 is configured to use a "standard" base address, since it is being forced to a certain value by definition. The solution to enabling a user defined I/O address resource is to select a basic configuration which allows Windows (and the user) to assign the base address.

3.4 Installing SSP-100 under Windows NT

To allow easy configuration of the DSP-100 the Quatech Device Manager for Windows NT has been written for the hardware. This configuration utility supports the DSP-100 only in block addressing mode.

To begin the installation, open Windows Explorer and search for the 'Setup.exe' command to install the Quatech Device Manager. <See following Windows Explorer figure.> (D:\Serial Port Adapters\Drivers\Windows NT 4.0 for PCI, PCMCIA,ISA). Once the installation is complete an icon will be placed on the desktop.
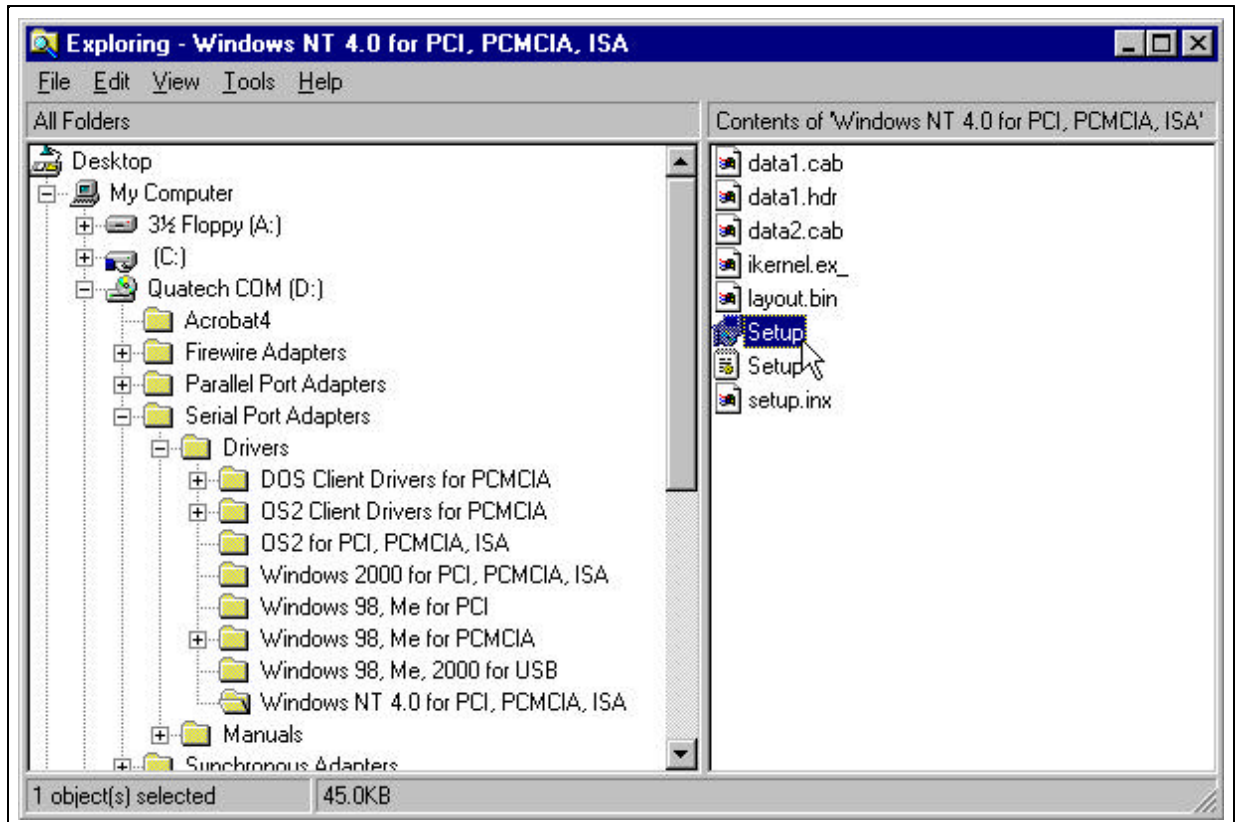
Windows NT Explorer

1. Locate and double click the Quatech Device Manager icon on the desktop
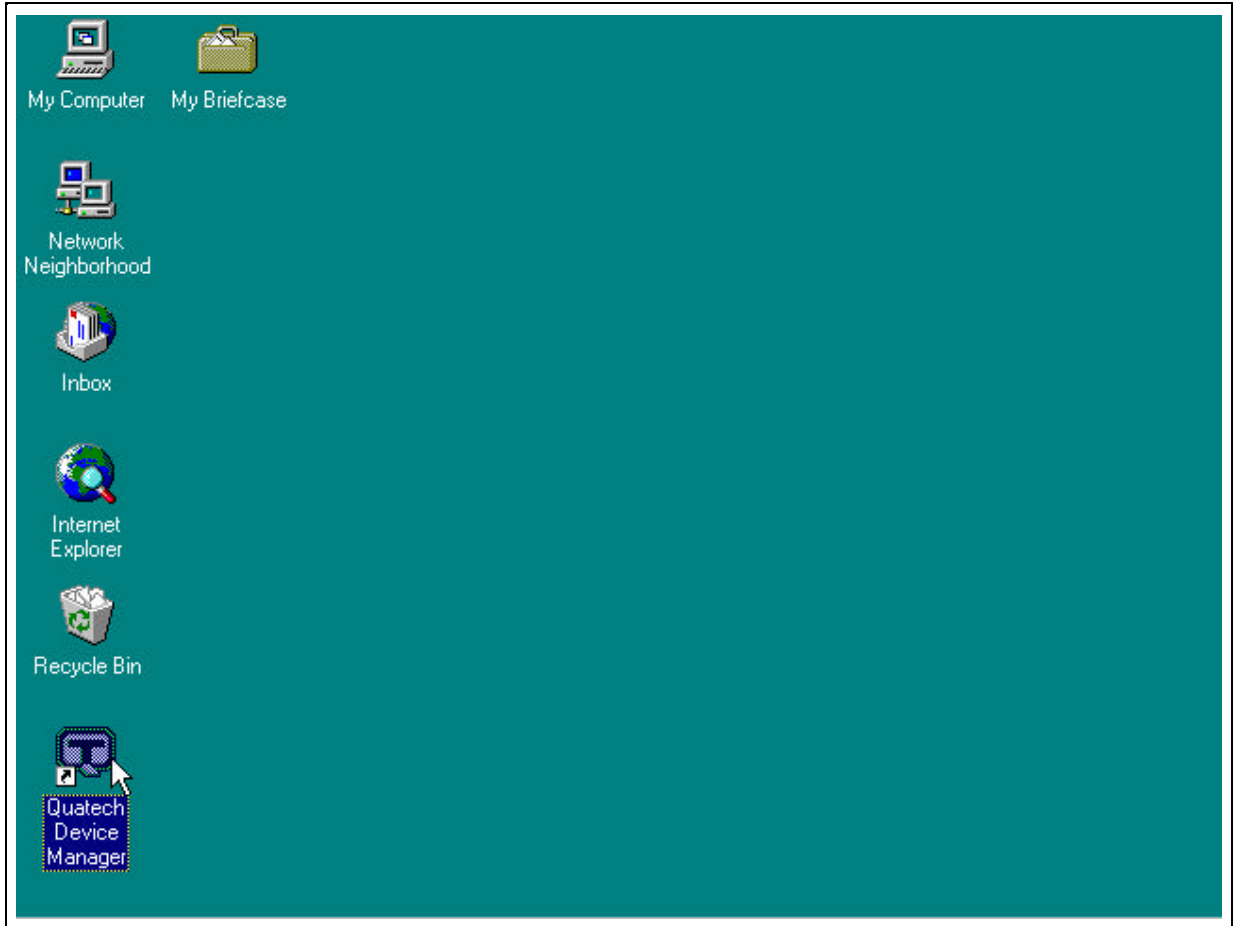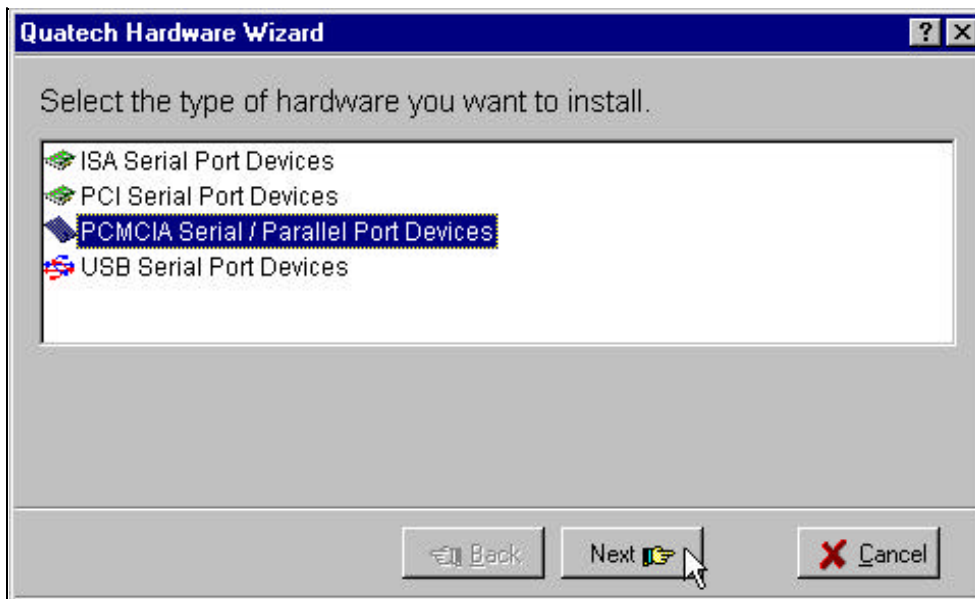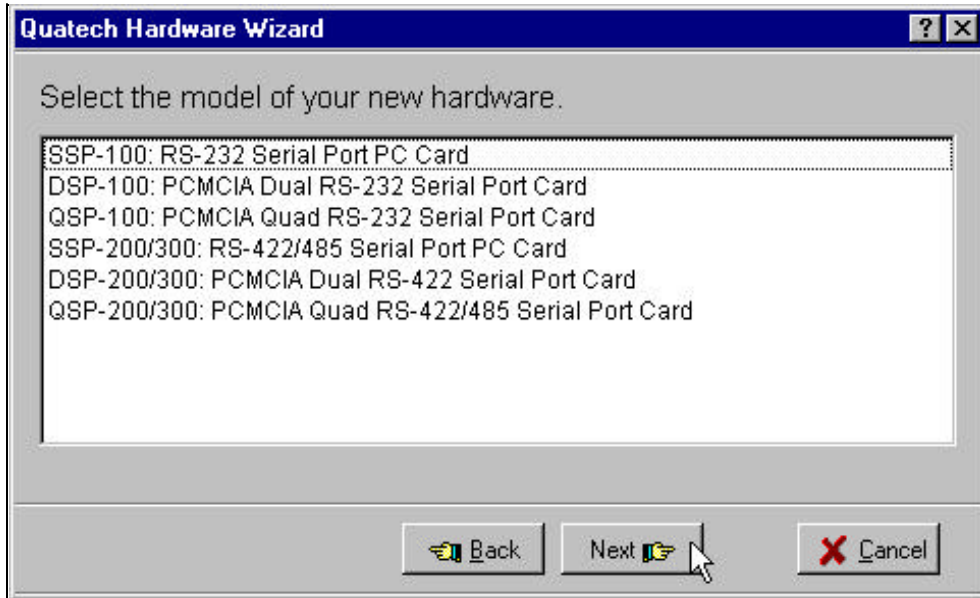

Device Manager Icon on Desktop

2. Click the 'Add' button at the bottom of the Quatech Device Manager Window.

3. Follow the steps for the 'Add Quatech Hardware Wizard'.

```
Quatech Hardware Wizard                                    [?] [X]

Select the model of your new hardware.

┌─────────────────────────────────────────────────────────────┐
│ SSP-100: RS-232 Serial Port PC Card                          │
│ DSP-100: PCMCIA Dual RS-232 Serial Port Card                 │
│ QSP-100: PCMCIA Quad RS-232 Serial Port Card                 │
│ SSP-200/300: RS-422/485 Serial Port PC Card                  │
│ DSP-200/300: PCMCIA Dual RS-422 Serial Port Card             │
│ QSP-200/300: PCMCIA Quad RS-422/485 Serial Port Card         │
│                                                               │
│                                                               │
│                                                               │
└─────────────────────────────────────────────────────────────┘

              [◀ Back]    [Next ▶]        [X Cancel]
```

4. Complete the final steps of the installation, insert the PCMCIA Card and reboot the computer.

   v Additional help is available online

The PCMCIA PC Card should now be configured. In the future, Windows NT will automatically recognize and configure the DSP-100.

Note: Windows NT does not support 'Plug and Play' for PCMCIA cards. The PCMCIA Card must be inserted prior to starting Windows NT and can not be removed and reinserted while Windows NT is running.
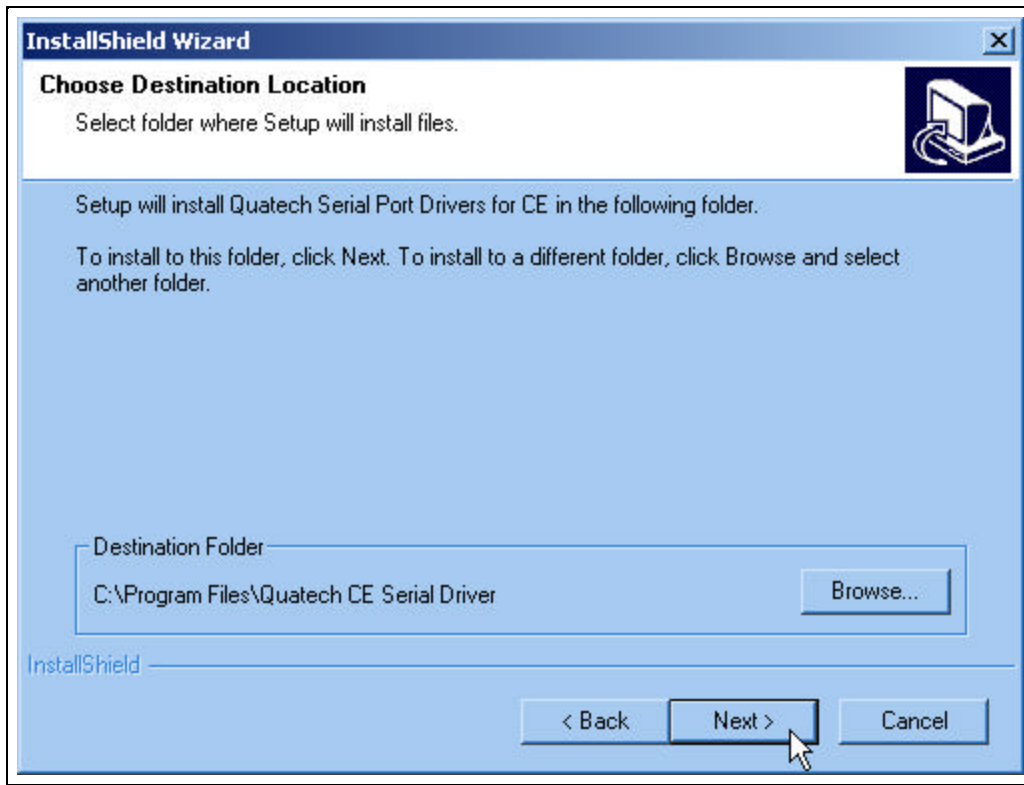
4. Windows CE

The Quatech PCMCIA Windows CD installation copies a multiple device-specific .cab files and the ini file to your desktop computer and launches the Application Manger (which resides on the user's desktop computer as a result of installing Active Sync) with the Application Manager .ini file as a parameter. This in turn will install the driver onto the Windows CE connected device or if not connected will install it on the next device connection to the desktop.

4.1 Installing Quatech PCMCIA Cards under Windows CE

1. Connect and establish communication to the device to the desk to using Active Sync (refer to Active Sync factory documentation

2. Locate and run the setup.exe file located in the Windows CE for PCMCIA folder on the Quatech COM CD.
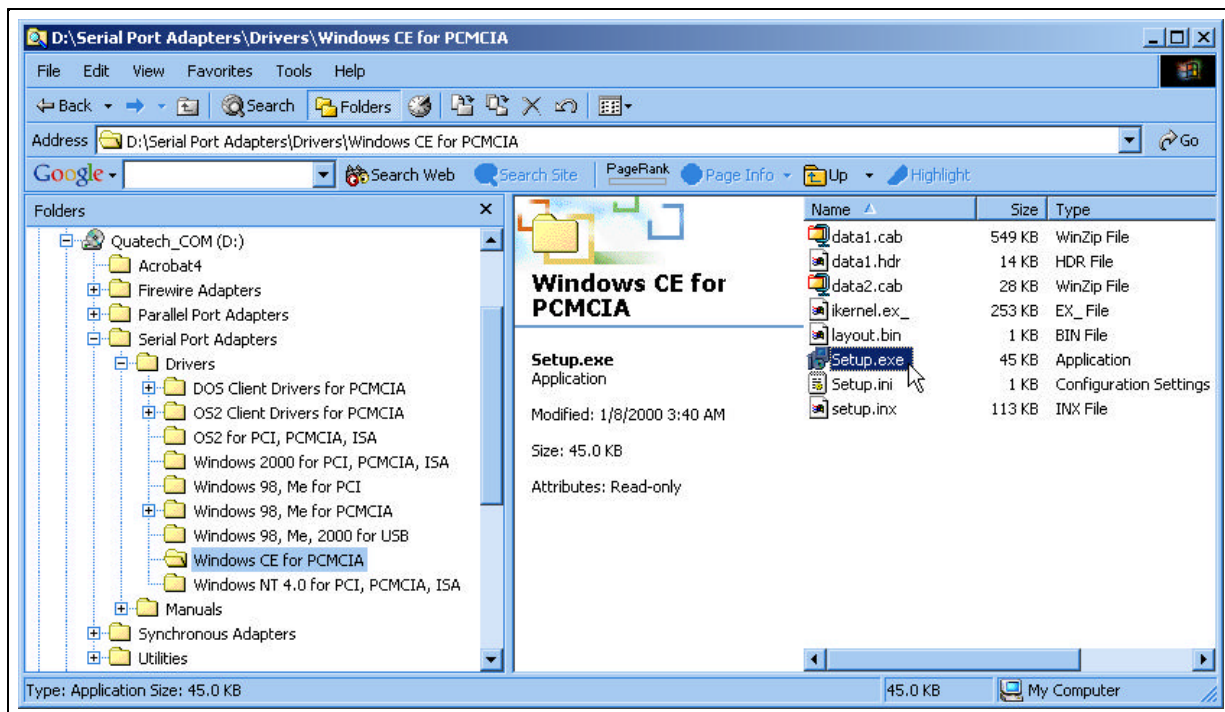
3. The setup program will copy the files to predetermined location, which can be changed by the user. Click next to proceed.. Installation is now complete.

In the event that installation process took place with out having the Windows CE device connected to the computer and the install program will prompt the user that
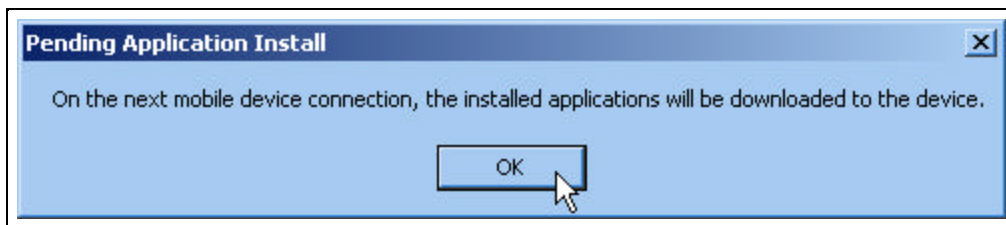
on the next on the next connection the device will complete the installation.
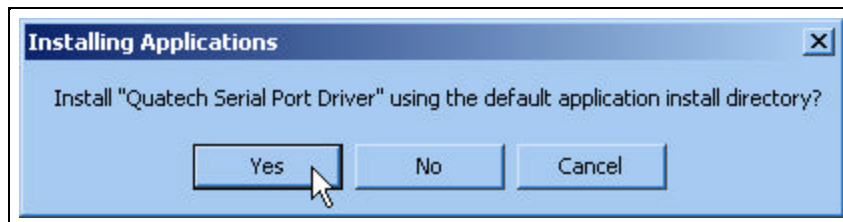
Choose 'Yes' on the following window and you installation is now complete.

5 OS/2 Installation

In order to use the SSP-100 Client Driver for OS/2, the system must be configured as follows:

1. The system must be running OS/2 version 2.1 or later.

2. OS/2 PCMCIA Card and Socket Services support must be installed. If PCMCIA support was not selected when OS/2 was installed, it can be added using the Selective Install facility in the System Setup folder. On OS/2 2.1 and 2.11, Socket Services must be added separately. The necessary files can be found on Compuserve in the OS2SUPPORT forum and may be available elsewhere. These files are not available from Quatech, Inc.

3. Quatech's OS/2 serial port device driver, "QCOM" version 2.01 or later, is not required but strongly recommended. The SSP-100 can operate with the standard OS/2 serial port device drivers provided the logical COM port number does not exceed four. If the logical COM port number is five, then the "QCOM" driver is required.   Quatech, Inc. can not guarantee the operation of the SSP-100 with any other third party device drivers for OS/2.

4. There must be at least 8 bytes of available I/O space and 1 available IRQ.

After the system has been configured to the above specifications, the SSP-100 Client Driver may be installed with the following procedure:

1. Copy the OS/2 client driver file from the distribution disk to any convenient directory on the hard disk.

2. Open the CONFIG.SYS file using any ASCII text editor.

3. Add the following line to the CONFIG.SYS file: DEVICE = *drive*:*path*\\SSP100.SYS *options* where *options* are the SSP-100 OS/2 Client Driver command line options discussed in the following sections.

4. Save the CONFIG.SYS file, exit the text editor, shutdown the system, and reboot to activate the changes.

5.1 Command Line Options

The SSP-100 Client Driver for OS/2 supports two methods of configuration: using "system assigned" resources and using "user assigned" resources. Both options provide full PCMCIA compliance and functionality (including "Hot-swapping") but each has some advantages and disadvantages as discussed in the following sections.

5.1.1 Configuring With "System Assigned" Resources

Allowing the OS/2 Plug-and-Play system to assign the hardware resources to the SSP-100 is the ideal choice when only OS/2 programs will access the serial ports. When configuring the hardware, the user simply specifies a list of COM port numbers. When an SSP-100 is inserted into a PCMCIA socket, the client driver will configure the card as a COM port, starting with the <u>lowest available port number</u> in the list.

Configuring a SSP-100 with system assigned resources can be a problem, however, if DOS and/or Windows applications will be accessing the serial ports. This is because most DOS applications write directly to the communications hardware and the Windows' Control Panel also wants to know the hardware configuration of the serial ports. In these cases, the user may want to configure the SSP-100 with "user assigned" resources.

<u>5.1.1.1 Example 1</u>
        DEVICE=C:\SSP-100\SSP100.SYS COM3

In example 1, the Client Driver will attempt to configure the SSP-100 as COM3.   If COM3 already exists in the system, the SSP-100 will not be configured. Furthermore, only one SSP-100 can be installed in this system.

<u>5.1.1.2 Example 2</u>
        DEVICE=C:\SSP-100\SSP100.SYS COM7 COM3

In example 2, the Client Driver will attempt to configure the SSP-100 as COM3 . If COM3 already exists in the system, the Client Driver will attempt to configure the SSP-100 as COM7 . If COM7 already exist already exist in the system, the SSP-100 will not be configured. Up to two SSP-100s can be installed in this system.

5.1.2 Configuring With "User Assigned" Resources

As mentioned in the previous section, allowing the OS/2 Plug-and-Play system to assign the hardware resources to the SSP-100 is ideal for OS/2 programs but can be a

problem if DOS and/or Windows applications will be accessing the serial ports. This is because most DOS applications write directly to the communications hardware and the Windows Control Panel also wants to know the hardware configuration of the serial ports. For this reason, the SSP-100 Client Driver allows the user to request specific hardware settings using a series of command line arguments of the form

(port,address,irq)

port   specifies the beginning COM port number
address specifies the base I/O address of the SSP-100 in hexadecimal and must reside on an even 8-byte boundary.
irq   specifies the interrupt level (IRQ) of the SSP-100 in decimal. *irq* must be one of the following values: 3, 4, 5, 7, 9, 10, 11, 12, 14, or 15.

Each argument must be enclosed in parentheses and must be separated from other arguments by a <u>space</u> on the command line. Within each argument, the parameters must be separated using a <u>comma</u> (no spaces).

When an SSP-100 is inserted into a PCMCIA socket, the client driver will configure the card as a series of COM ports, starting with the <u>lowest available port number</u> in the list.

> ## IMPORTANT:
> If the user specified resources are in-use by other devices in the system, the SSP-100 will not be configured.

5.1.2.1 Example 1

DEVICE=C:\SSP-100\SSP100.SYS (3,100,5)

In example 1, the Client Driver will attempt to configure the SSP-100 as COM3 using I/O addresses 100-107 hex and IRQ 5. If COM3 already exists, or if the I/O address or IRQ resources are already in use, the SSP-100 will not be configured. Furthermore, only one SSP-100 can be installed in this system.

    DEVICE=C:\SSP-100\SSP100.SYS (7,120,15) (3,300,4)

In example 2, the Client Driver will attempt to configure the SSP-100 as COM3 using I/O address 300-307 hex and IRQ 4. If COM3 already exists, or if the I/O address or IRQ resources are already in use, the Client Driver will attempt to configure the SSP-100 as COM7 using I/O address 120-127 hex and IRQ 15. If COM7 already exists or if the I/O address or IRQ resources are already in use, the SSP-100 will not be configured. Up to two SSP-100s can be installed in this system.

5.1.3 Advanced Configuration Topics

For some applications, it may be desirable to specify the resources for one SSP-100 while allowing the OS/2 Plug-and-Play system to assign the hardware resources for any additional cards. This can be accomplished by mixing the configuration methods on the SSP-100 Client Driver command line

    DEVICE=C:\SSP-100\SSP100.SYS (3,100,5) COM7

It is important to remember that when a SSP-100 is inserted into a PCMCIA socket, the client driver will configure the card as a series of COM ports, starting with the lowest available port number in the list.

Another common application requirement is to have a SSP-100 inserted into socket 1 be configured as COM3 while a SSP-100 inserted into socket 2 be configured as COM7 . This type of configuration is supported by appending a "=Sx" parameter **after** any command line argument.

    DEVICE=C:\SSP-100\SSP100.SYS COM3=S1 COM7=S2
    DEVICE=C:\SSP-100\SSP100.SYS (3,100,4)=S1 (7,300,3)=S2

5.2 Monitoring The Status Of PCMCIA Cards

OS/2 Warp provides a utility called "Plug and Play for PCMCIA" that can be used to monitor the status of each PCMCIA socket. In OS/2 version 2.1, this utility is called "Configuration Manager". When a SSP-100 is inserted, the Card Type for the appropriate socket will display "Serial". If the card is successfully configured, the Card Status will display "Ready". If the card cannot be configured, the Card Status will be "Not Ready" or "In". The resources claimed by a configured card can be viewed by double-clicking on that card's line in the window.
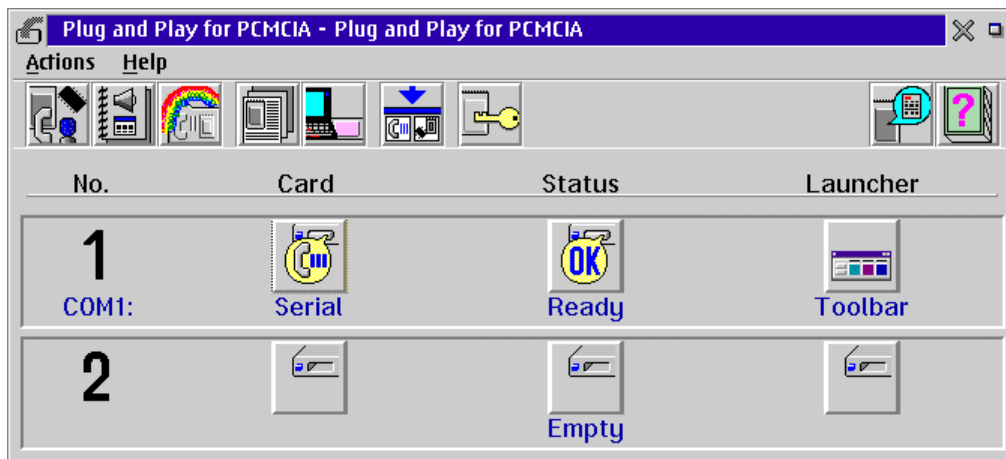

Figure 11. OS/2 Plug and Play GUI with properly configured SSP-100.

(This Page Left Intentionally Blank)

6. External Connections

An adapter cable is included with the SSP-100 to convert the 9-pin PCMCIA output connector into a standard D-9 female connector, data terminal equipment (DTE), as shown in the figures below.
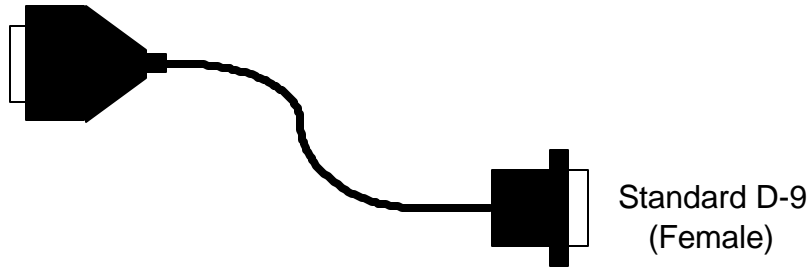

Standard D-9
(Female)

Figure 12. SSP-100 Adapter Cable.

CD	1	
		6 DSR
DATA IN	2	
		7 RTS
DATA OUT	3	
		8 CTS
DTR	4	
		9 RI
GND	5	

D-9 Female Connector
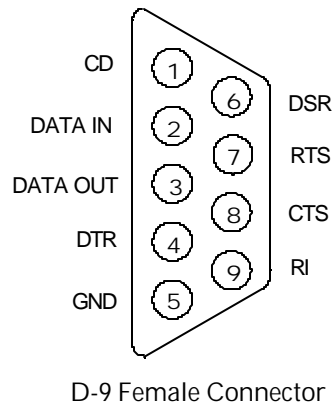
Figure 13. RS-232 Signal Assignment.

(This page intentionally left blank.)

7. Specifications

Bus Interface   PCMCIA
                                PC Card Standard 2.1 compliant

Physical Dimensions   Type II PCMCIA card (5mm)

Maximum Baud Rate   120K

Power Requirements   +5 volts   18.85 mA (typical)
25.95 mA (maximum)

Connector   Adapter to standard female D-9

SSP-100
User's Manual
Revision 2.30
September, 2001
P/N 940-0074-230